

ABSTRACT OF THE DISCLOSURE

A process is provided for making thermoplastic-composites from recycled thermoplastics (polyolefins) together with phosphogypsum waste by-product from the phosphate fertilizer wet process or, in an equally preferred embodiment with fluorogypsum waste by-product from
5 fluorine production wet process to produce lumber profiles. The process involves (a) admixing phosphogypsum (calcium sulfate) and/or fluorogypsum (calcium fluoride) waste byproduct and/or Flue Gas Desulfurization (FGD) gypsum and/or crude gypsum and/or calcined gypsum with thermoplastics and a functionalized compound with or without coupling agents to produce a filled thermoplastic-composite composition, and (b) melt processing the composition to
10 produce a filled thermoplastic-composite article. The articles are preferably in the form of railroad cross ties or construction articles such as common lumber profiles, panels, tiles, poles, utility poles, crossarms for utility poles, roofing tiles, pipeline skids, pilings, marine fender-piles (including light emitting piles), bulkheads, revetments, and are useful for constructing various structures, such as oilfield board roads and equipment mats. The process avoids the accumulation
15 of undesired phosphogypsum/ fluorogypsum “stacks” and provides environmentally friendly useful products which require no chemical preservatives to prevent insect infestation or decay from the elements. Tailings from ore processing can also be used as a filler.

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